

**WE CLAIM AS OUR INVENTION:**

1. A method for speed-resolved flow measurement during a movement cycle in magnetic resonance tomography, comprising the steps of:

acquiring a magnetic resonance tomography overview image of a selected region of a living subject;

displaying the overview image on a screen;

quasi-simultaneously acquiring data for an anatomical image series of the selected region and data for a speed-resolved image series of a region identified within a selected region during the movement cycle, with respective images in said anatomical image series having a time correspondence with respective images in said speed-resolved image series; and

displaying said anatomical image series and said speed-resolved image series on said screen with each image in said speed-resolved image series being integrated in the time-corresponding image of the anatomical image series.

2. A method as claimed in claim 1 comprising segmenting said region identified within said selected region automatically during acquisition of said speed-resolved image series.

3. A method as claimed in claim 1 comprising segmenting said region identified within said selected region immediately after acquisition of said speed-resolved image series.

4. A method as claimed in claim 1 comprising color-coding the images in said speed-resolved image series.

5. A method as claimed in claim 1 comprising displaying said anatomical image series and said speed-resolved image series on said screen immediately after acquiring said data for said anatomical image series and said data for said speed-resolved image series.

6. A method as claimed in claim 5 comprising displaying said anatomical image series and said speed-resolved image series as a movie on said screen.

7. A method as claimed in claim 1 comprising manually identifying, on said screen, said region within said selected region.

8. A method as claimed in claim 1 comprising identifying a plurality of regions within said selected region during the movement cycle, and acquiring data for a speed-resolved image series for each of said regions.

9. A method as claimed in claim 1 comprising acquiring said data for said anatomical image series and said data for said speed-resolved image series for a time, as said movement cycle, selected from the group consisting of a breathing cycle of said subject and an art cycle of said subject.

10. A method as claimed in claim 1 comprising acquiring said data for each of said anatomical image series and said speed-resolved image series at approximately 20 images per movement cycle.

11. A magnetic resonance tomography apparatus comprising:

a magnetic resonance scanner adapted to receive a living subject therein;

a control computer for operating said magnetic resonance scanner;

a display screen connected to said control computer; and

said control computer operating said magnetic resonance scanner for acquiring a magnetic resonance tomography overview image of a selected region of a living subject, displaying the overview image on a screen, quasi-simultaneously acquiring data for an anatomical image series of the selected region and data for a speed-resolved image series of a region identified within a selected region during the movement cycle, with respective images in said anatomical image series having a time correspondence with respective images in said speed-resolved image series, and

displaying said anatomical image series and said speed-resolved image series on said screen with each image in said speed-resolved image series being integrated in the time-corresponding image of the anatomical image series.

12. A computer software product loadable into a control computer of a magnetic resonance tomography apparatus, including a magnetic resonance scanner operated by the control computer and a display screen connected to the control computer, said computer program product running in said control computer and programming said control computer to:

acquire a magnetic resonance tomography overview image of a selected region of a living subject,

display the overview image on a screen,

quasi-simultaneously acquire data for an anatomical image series of the selected region and data for a speed-resolved image series of a region identified within a selected region during the movement cycle, with respective images in said anatomical image series having a time correspondence with respective images in said speed-resolved image series, and

display said anatomical image series and said speed-resolved image series on said screen with each image in said speed-resolved image series being integrated in the time-corresponding image of the anatomical image series.